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GRADE 12
DIPLOMA EXAMINATION

Biology 30

January 1991

Alberta
EDUCATION

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**GRADE 12 DIPLOMA EXAMINATION
BIOLOGY 30**

DESCRIPTION

Time: 2½ hours

Total possible marks: 100

This is a **closed-book** examination consisting of **two** parts:

PART A has 70 multiple-choice questions each with a value of one mark.

PART B has seven written-response questions for a total of 30 marks.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

GENERAL INSTRUCTIONS

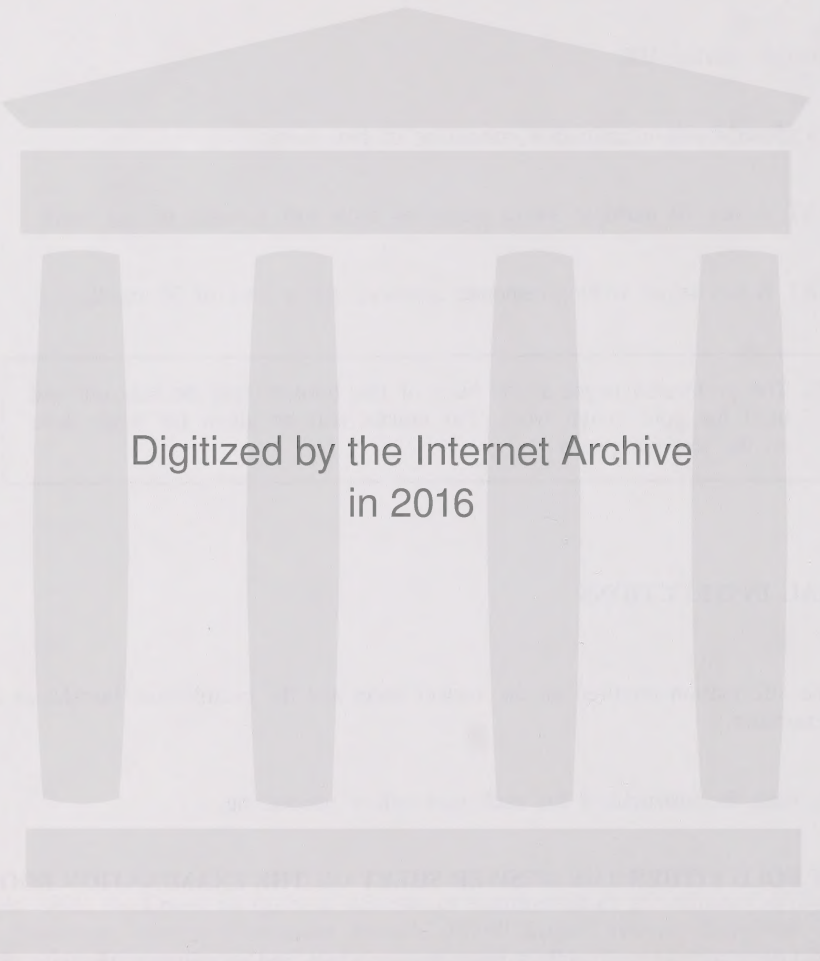
Fill in the information required on the answer sheet and the examination booklet as directed by the examiner.

Carefully read the instructions for each part before proceeding.

DO NOT FOLD EITHER THE ANSWER SHEET OR THE EXAMINATION BOOKLET.

The presiding examiner will collect your answer sheet and examination booklet and send them to Alberta Education.

JANUARY 1991



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PART A

INSTRUCTIONS

In this part of the examination, there are 70 multiple-choice questions each with a value of one mark.

Read each question carefully and decide which of the choices **best** completes the statement or answers the question. Locate that question number on the separate answer sheet provided and fill in the space that corresponds to your choice. Use an **HB pencil only**.

Example

This diploma examination is for the subject of

- A. Biology
- B. Physics
- C. Chemistry
- D. Mathematics

Answer Sheet

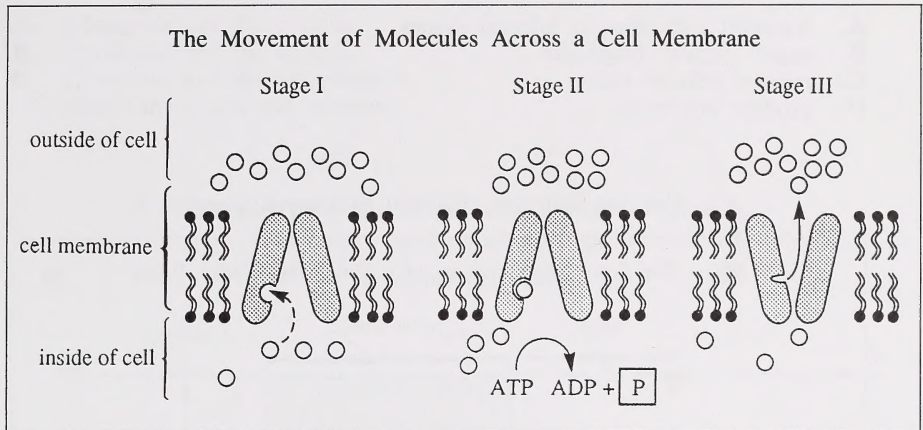
A	B	C	D
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you wish to change an answer, erase your first mark completely.

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DO NOT TURN THE PAGE TO START THE EXAMINATION UNTIL TOLD TO DO SO BY THE PRESIDING EXAMINER.

Use the following diagram to answer question 1.



1. The diagram illustrates the process of

- A. diffusion
- B. endocytosis
- C. phagocytosis
- D. active transport

Use the following information to answer question 2.

Some Organelle Functions	
I.	Synthesizes hormones from RNA
II.	Isolates digestive enzymes from the cytoplasm
III.	Stores cell genetic information
IV.	Produces amino acids

2. The nucleus carries out

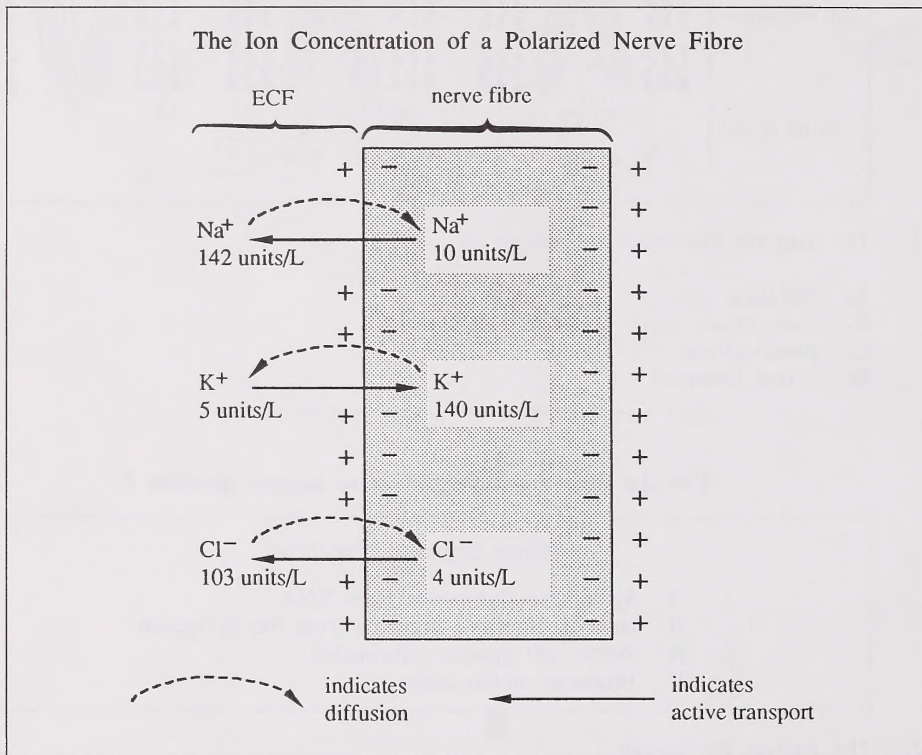
- A. I, II, and III only
- B. I, II, III, and IV
- C. II and III only
- D. III only

3. Cells in the nephron contain very high numbers of mitochondria because these organelles

- A. provide energy for the active transport of sodium ions
- B. assist ADH in decreasing the permeability of cell membranes to water
- C. provide energy for the synthesis of aldosterone, a regulatory hormone
- D. assist in the breakdown of excess amino acids and in the formation of urea

4. Through the process of endocytosis, some white blood cells
- transport antibodies to infected tissues
 - engulf cellular fragments
 - remove cellular wastes
 - produce antibodies

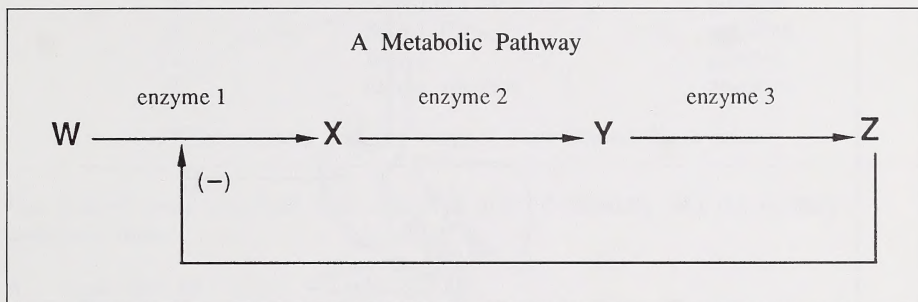
Use the following diagram to answer question 5.



5. Which interpretation of the data is correct?
- The concentration of sodium ions in the ECF is maintained by a pumping mechanism that continuously transports sodium ions out of the nerve fibre.
 - The internal negative charge results from the repulsion of chloride ions, which forces the ions outward through the membrane.
 - Potassium ions readily diffuse into the nerve fibre and must constantly be removed by active transport.
 - Chloride ions readily diffuse into the ECF and must constantly be reabsorbed by the nerve fibre.

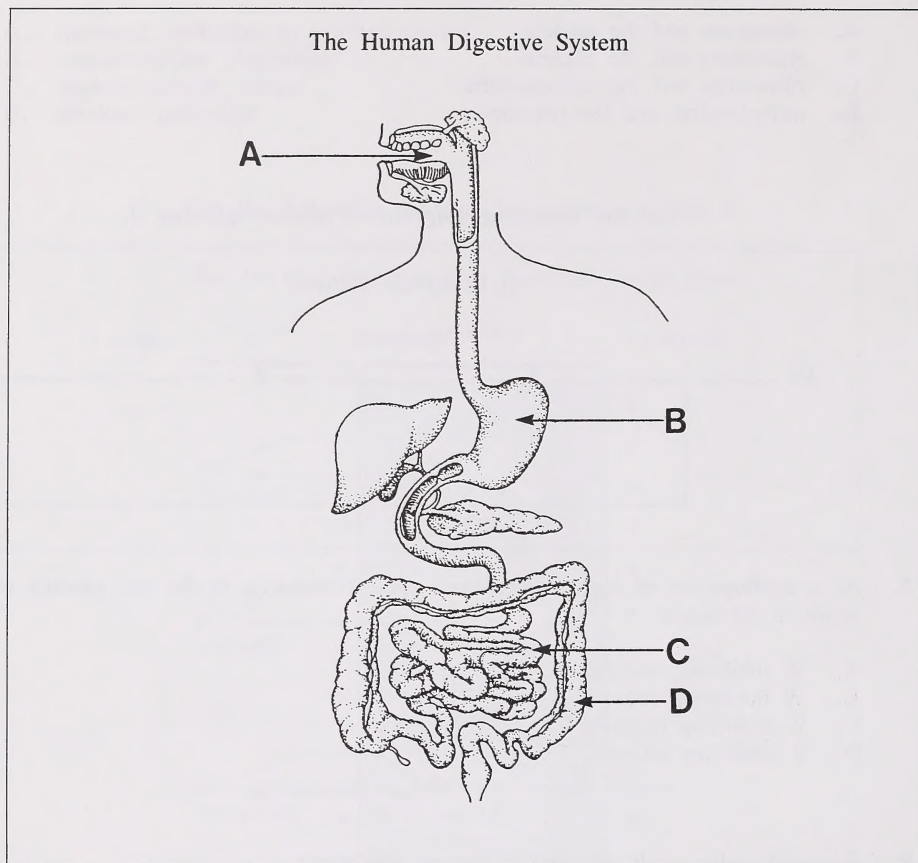
6. Organelles that function in catabolic (breaking down) activities within the cell are the
- A. ribosomes and the nucleus
 - B. lysosomes and the nucleus
 - C. ribosomes and the mitochondria
 - D. mitochondria and the lysosomes

Use the following diagram to answer question 7.



7. As a consequence of negative feedback, an accumulation of the end product will result in substance
- A. W inhibiting enzyme 1
 - B. W inhibiting enzyme 3
 - C. Z inhibiting enzyme 1
 - D. Z inhibiting enzyme 3
-
8. Essential amino acids required by human adults are
- A. those amino acids that the body must synthesize for itself
 - B. those amino acids that the body cannot synthesize for itself
 - C. the eight amino acids, all of which are required in each human protein
 - D. the eight amino acids, at least one of which is required in each human protein
9. The amount of time that it would otherwise take for fats and oils to be digested is reduced considerably by secretions from the
- A. liver
 - B. stomach
 - C. gastric glands
 - D. large intestine

Use the following diagram to answer question 10.



10. Which lettered structure is correctly paired with its function?

Lettered Structure	Function
A	initial breakdown of monosaccharides
B	complete digestion of proteins
C	digestion and absorption
D	complete digestion of proteins and absorption of water

Use the following information to answer question 11.

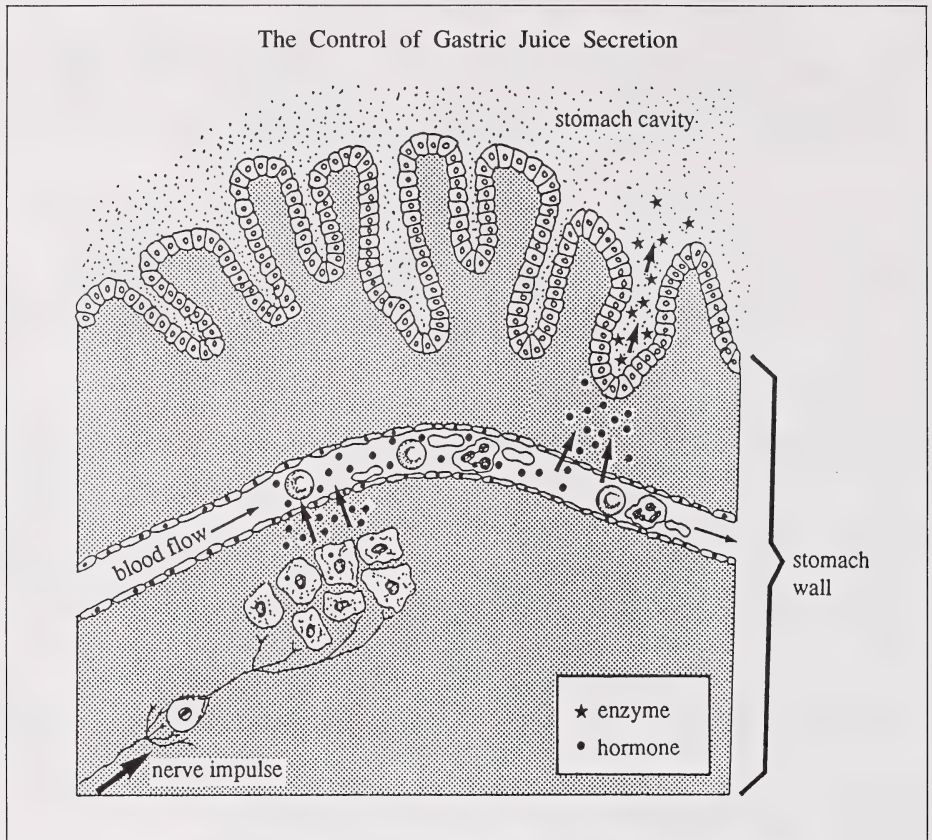
A student was given a mixture of a number of unknown organic compounds in water and was asked to determine what the compounds were. The student placed 2 mL of the mixture in each of four test tubes, labelled W, X, Y, and Z, then added the reagents shown in the table, and recorded the results. Each test was repeated three times and yielded identical results.

<u>Test Tube</u>	<u>Reagent Added</u>	<u>Result</u>
W	Benedict's solution*	positive
X	Sudan IV	negative
Y	Biuret	positive
Z	Iodine solution	negative

*The mixture and the reagent were heated for 1 min.

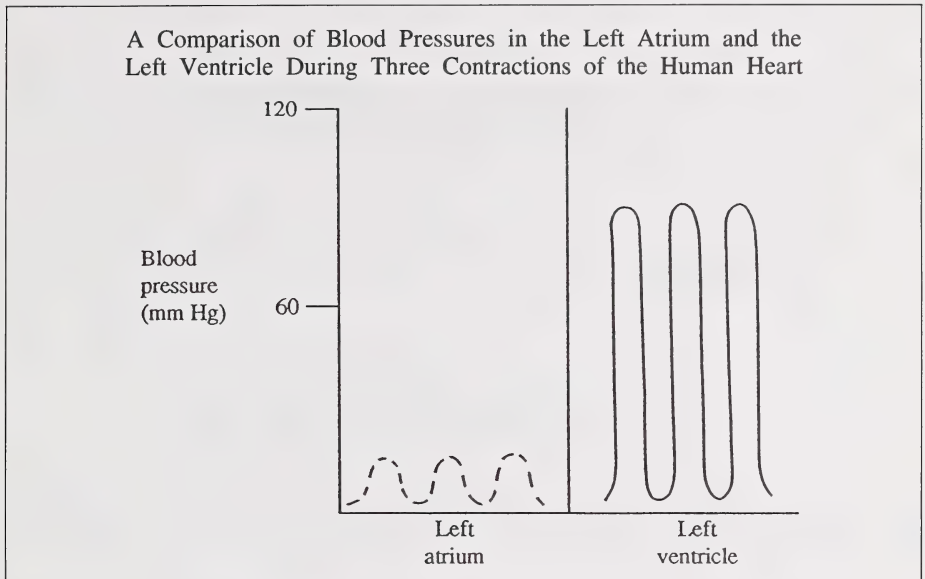
11. The student could conclude with a high degree of certainty that the mixture contained **both**
- A. sugar and fat
 - B. starch and fat
 - C. sugar and protein
 - D. starch and protein
-
12. Much of the glucose absorbed in the villi of the small intestine is removed directly from the blood by the
- A. lymphatic system
 - B. large intestine
 - C. pancreas
 - D. liver
13. The contents of the small intestine pass directly into the
- A. colon
 - B. rectum
 - C. bile duct
 - D. gallbladder
14. One of the functions of the large intestine is to
- A. complete the digestion of proteins
 - B. help maintain the body's water balance
 - C. collect and concentrate urea for excretion
 - D. sustain bacteria that digest complex lipids

Use the following diagram to answer question 15.



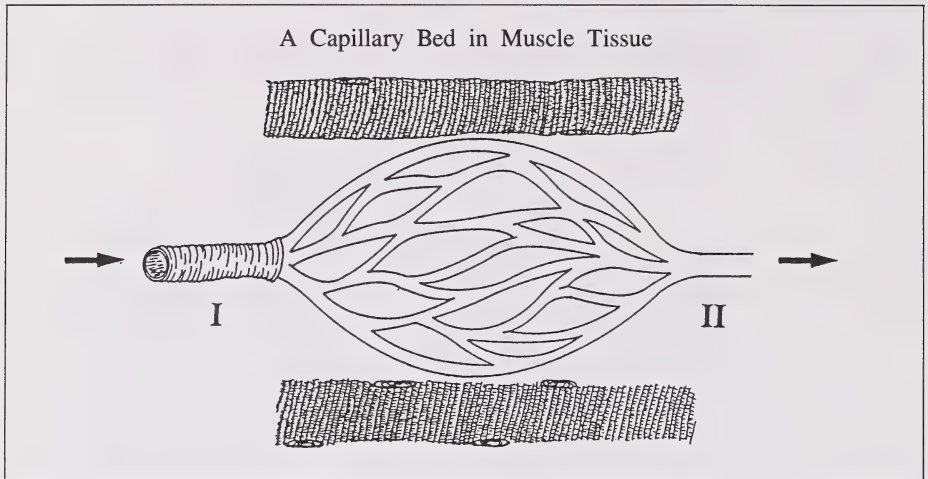
15. The diagram represents one mechanism that controls the secretion of gastric juices. Which two additional factors stimulate gastric juice secretion?
- A. Amylase in the stomach and the smell of food
 - B. Lipase in the stomach and the thought of food
 - C. Sodium bicarbonate in the stomach and the relaxing of the stomach wall
 - D. Partially digested proteins in the stomach and the stretching of the stomach wall
-
16. Venous blood is kept moving by the
- A. osmotic pressure of the lymphatic system
 - B. contraction of skeletal muscles
 - C. osmotic pressure in the venules
 - D. contraction of capillary beds

Use the following graph to answer question 17.



17. It is unnecessary for the left atrium to create as much pressure as the left ventricle because
- A. the atrium is smaller than the ventricle
 - B. there is a valve between the atrium and the ventricle
 - C. the atrium pumps blood a shorter distance than does the ventricle
 - D. the wall of the atrium has less muscle than does the wall of the ventricle
-
18. If impulse conduction within the heart is rapid and irregular, the result may be high-frequency unco-ordinated muscle contractions (fibrillation). The most probable effect of fibrillation is that the
- A. blood will clot more readily, thereby causing strokes
 - B. blood leaving the heart will be under higher than normal pressure
 - C. atria or ventricles will fail to pump sufficient amounts of blood
 - D. atria or ventricles will pump sufficient amounts of blood to the body but not to the heart muscle
19. Rapid multiplication of bacterial cells in a person's body could be the result of a decrease in the quantity of
- A. antigens
 - B. platelets
 - C. leukocytes
 - D. erythrocytes

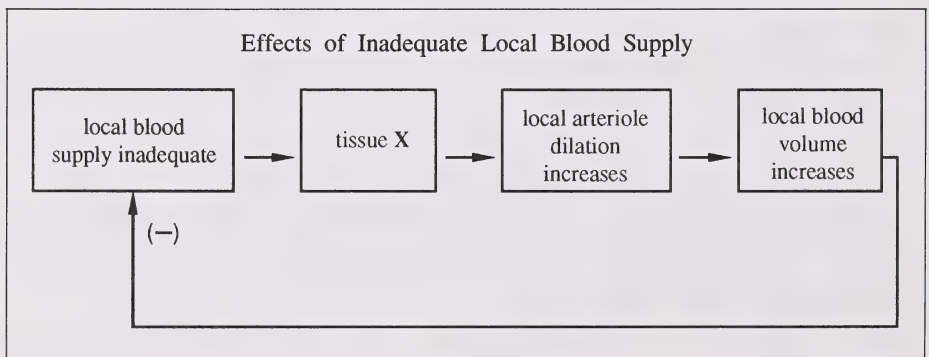
Use the following diagram to answer question 20.



20. The concentration of which substance is higher in blood vessel II than it is in blood vessel I?

A. O_2
 B. CO_2
 C. ATP
 D. Glucose

Use the following diagram to answer question 21.

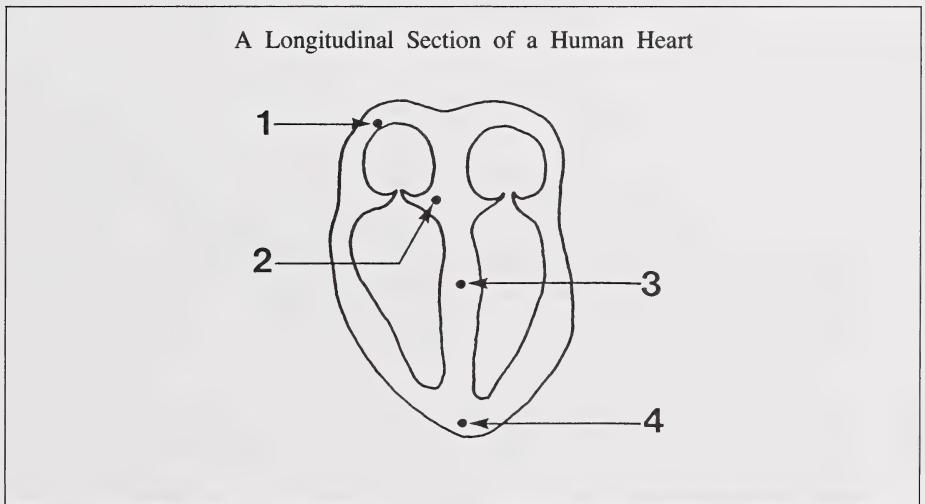


21. Which condition in tissue X would lead to an increase in the local blood volume?

A. Increasing pH
 B. High O_2 concentration
 C. High CO_2 concentration
 D. Decreasing glucose levels

22. The formation of a particular antibody by the immune system
- A. always causes blood clotting when blood samples of different types are mixed
 - B. occurs in response to a specific antigen detected by lymphocytes
 - C. occurs only when a disease-causing organism enters the body
 - D. causes the destruction of any antigen found in the body
23. Blood pressure in the body rises as a result of
- A. dilation of the veins
 - B. a decrease in heart rate
 - C. dilation of the arteries
 - D. a decrease in elasticity of the arterial walls

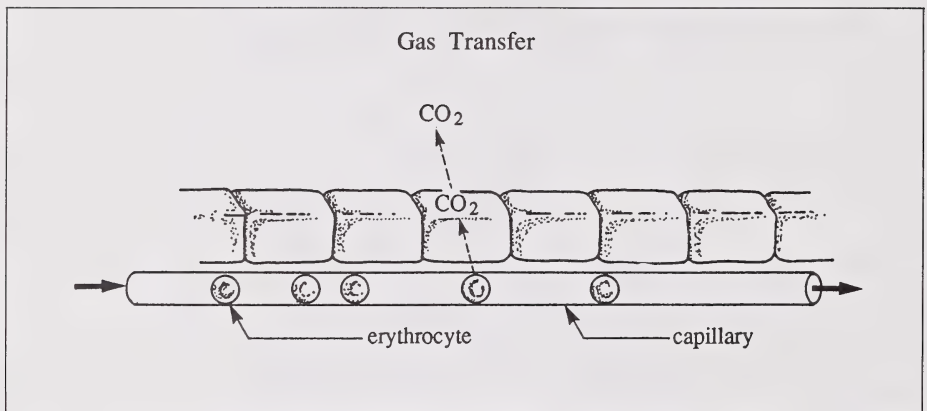
Use the following diagram to answer question 24.



24. The structure that under normal conditions regulates the heart rate is located at
- A. 1
 - B. 2
 - C. 3
 - D. 4
-

25. The concentration of oxyhemoglobin is highest in the
- A. renal vein
 - B. coronary vein
 - C. pulmonary vein
 - D. hepatic portal vein
26. The breakdown of the alveolar walls in the lungs can result in
- A. emphysema
 - B. inflammation of the bronchiole walls
 - C. accumulation of lymph in the alveoli
 - D. decreased blood flow to the breathing centre

Use the following diagram to answer question 27.

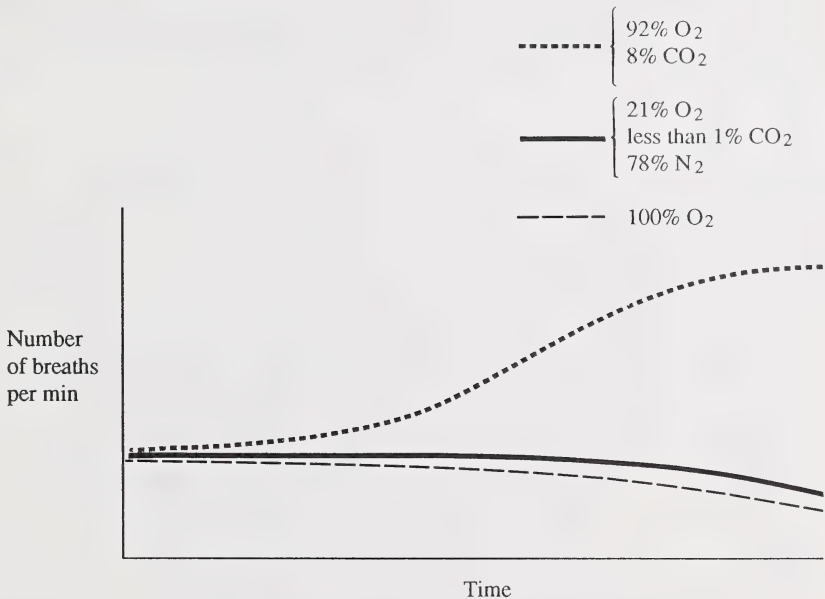


27. The net transfer of CO₂, as shown in the diagram, takes place in the
- A. intestinal cells
 - B. muscle cells
 - C. nephrons
 - D. alveoli
-
28. Factors that increase oxygenation of the body's blood supply are
- A. high blood volume and high altitude
 - B. slow blood flow and high altitude
 - C. slow blood flow and low altitude
 - D. high hemoglobin and low altitude

Use the following information to answer question 29.

A breathing rate experiment required a subject to inhale air of varying compositions. The subject first inhaled air composed of 92% O₂ and 8% CO₂, then normal air (21% O₂, less than 1% CO₂, and 78% N₂), and, finally, air composed of 100% O₂. The subject's breathing rate was normal before each test was administered. The results of the experiment are shown by the graph.

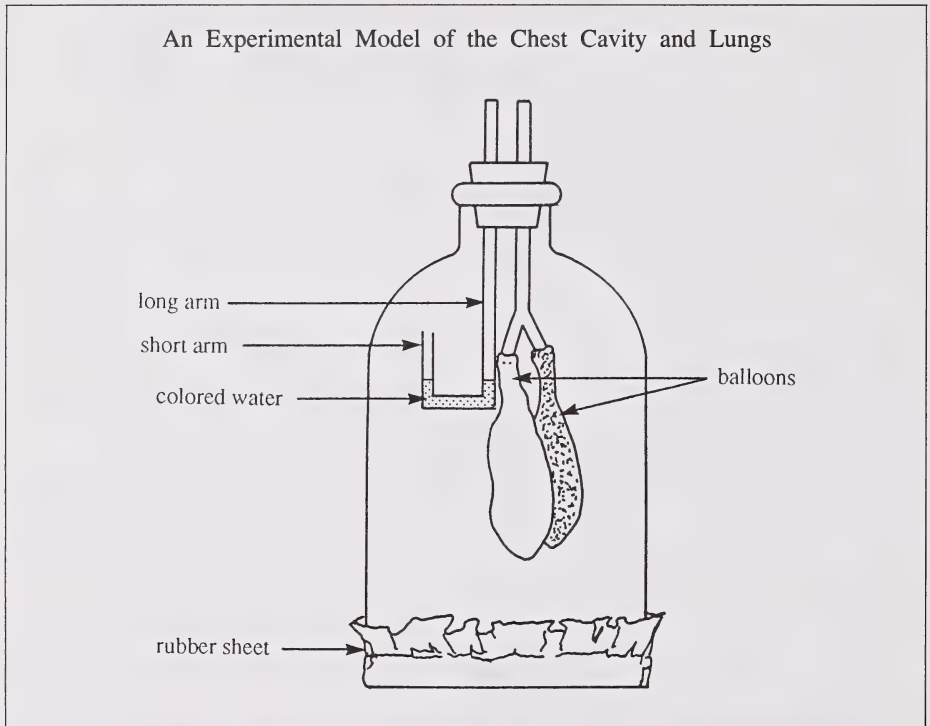
Changes in Breathing Rate Resulting from Inhalation of Different Air Mixtures



29. Before the experiment, it was hypothesized that a low concentration of oxygen would increase the breathing rate. According to the graph, this **hypothesis** is
- A. contradicted by the data
 - B. a restatement of the data
 - C. an application of the data
 - D. logical and supported by the data

30. One reason that gas exchange occurs between the capillaries and the alveoli is that, unlike other parts of the respiratory tract, the alveoli have
- A. extremely thin walls
 - B. cells that actively transport O_2
 - C. the highest concentration of hemoglobin
 - D. the enzymes required for movement of O_2

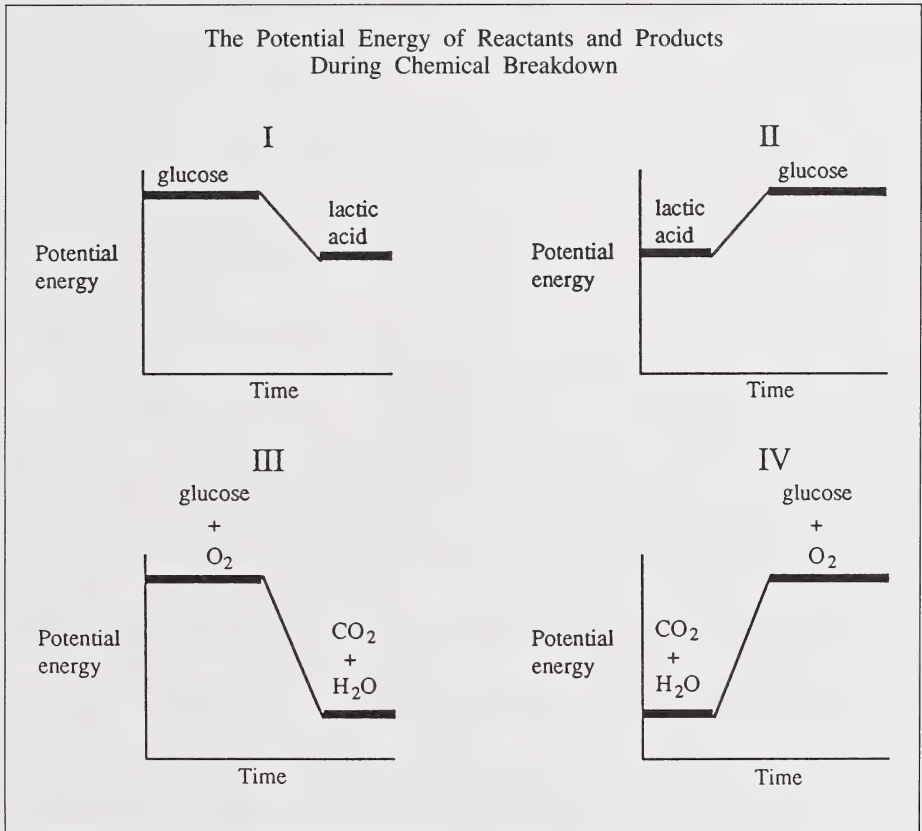
Use the following diagram to answer question 31.



31. Colored water is forced to rise in the short arm of the tube. The real-life condition demonstrated is the
- A. relaxation of the diaphragm and rib muscles
 - B. contraction of the diaphragm and rib muscles
 - C. increased volume of the chest cavity, which causes exhalation
 - D. decreased volume of the chest cavity, which causes inhalation
-

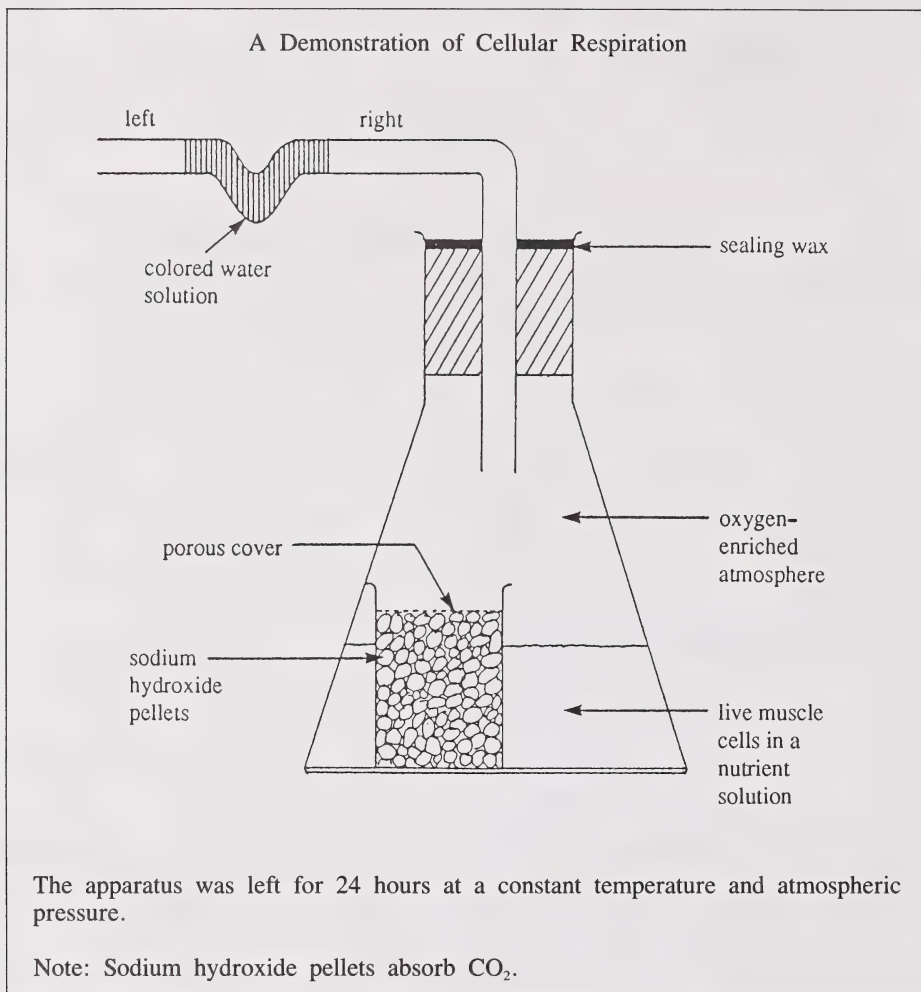
32. By which process do organisms transfer chemical bond energy from organic molecules to ATP?
- Respiration
 - Circulation
 - Nutrition
 - Digestion

Use the following graphs to answer question 33.



33. The graphs that illustrate aerobic and anaerobic respiration respectively are
- III and I
 - III and II
 - IV and I
 - IV and II

Use the following information to answer question 34.



34. After 24 hours, a person would expect the colored water solution in the tube to
- A. remain stationary because equilibrium has been reached
 - B. move to the left because of the production of carbon dioxide by the muscle cells
 - C. move to the right because of the removal of oxygen and carbon dioxide from the flask's atmosphere
 - D. increase in volume because of the condensation of additional water vapor produced by the muscle cells

35. Active transport and maintaining a constant body temperature are similar in that **both** processes
- A. depend on a concentration gradient
 - B. rely on muscle contraction
 - C. produce ATP
 - D. utilize ATP

Use the following information to answer question 36.

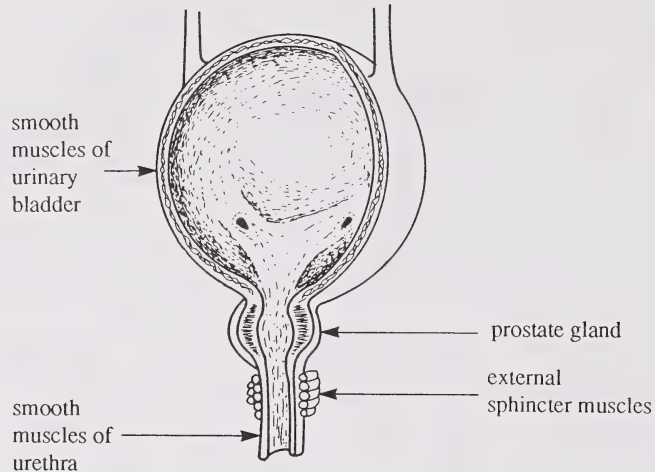
Some Conditions that Affect Cellular Respiration

- I. Ingestion of cyanide blocks H^+ transfer in the electron transport chain.
- II. Niacin deficiency blocks an electron acceptor in the electron transport chain.
- III. Iron deficiency prevents adequate amounts of oxygen from reaching cells.
- IV. Inhalation of carbon monoxide blocks O_2 transport.

36. Which statement is correct?
- A. If any one of the four conditions is present, aerobic respiration will replace anaerobic respiration.
 - B. If conditions I and II are present, aerobic respiration will occur but anaerobic respiration will stop.
 - C. If conditions I and IV are present, aerobic respiration will stop, resulting in death.
 - D. If conditions III and IV are present, neither aerobic nor anaerobic respiration will occur.
-
37. The function of the proximal tubule of the nephron is to
- A. initiate the formation of urea
 - B. filter material from the blood
 - C. reabsorb urea into the blood
 - D. return material to the blood

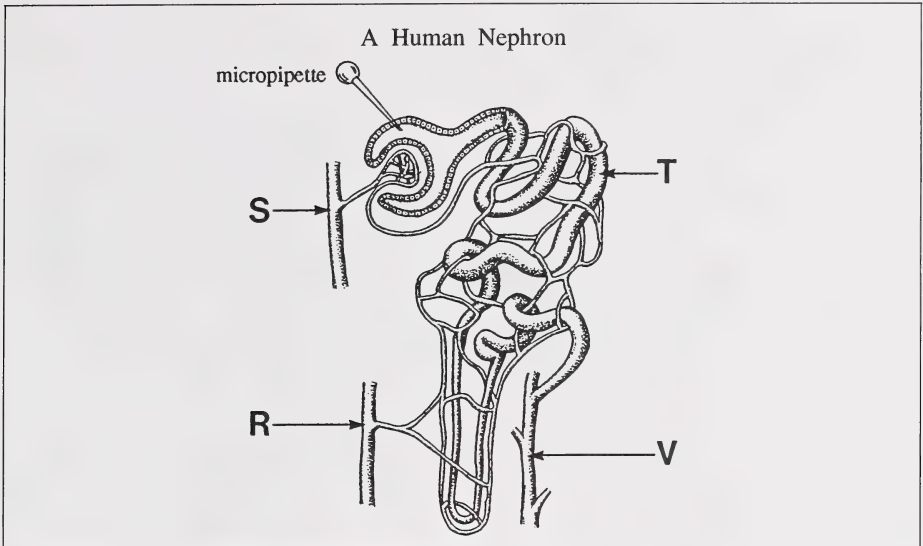
Use the following diagram to answer question 38.

The Human Male Urinary Bladder and Its Associated Structures



38. The ability to control urination is a learned response among humans. For a male to develop this response, he must learn to control the contraction and relaxation of the
- A. prostate gland
 - B. external sphincter muscles
 - C. smooth muscles of the urethra
 - D. smooth muscles of the urinary bladder
-
39. The liver removes nitrogen-containing amino groups ($-\text{NH}_2$) from excess amino acids and converts them into
- A. urea
 - B. bile
 - C. protein
 - D. glycogen

Use the following diagram to answer questions 40 and 41.



40. The concentration of urea is highest in the structure labelled
- A. R
 - B. S
 - C. T
 - D. V
41. Fluid withdrawn by the micropipette from the structure shown contains
- A. fats
 - B. glucose
 - C. antibodies
 - D. red blood cells

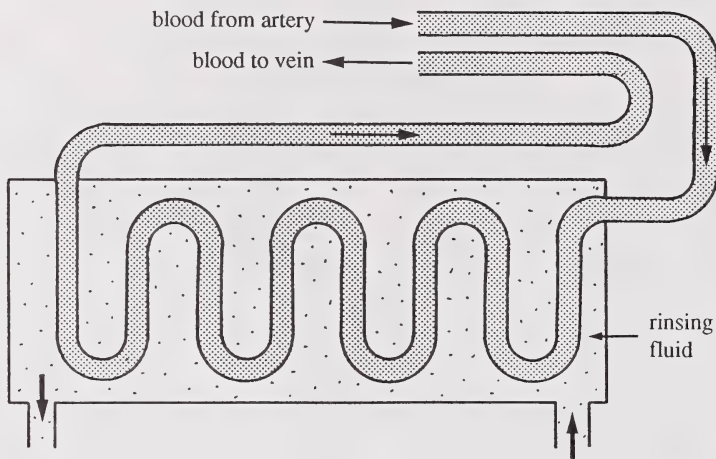
Use the following information to answer question 42.

Three major groups of compounds found in the blood are proteins, metabolically important substances (e.g., glucose), and waste products (e.g., urea).

42. Concentrations of metabolically important substances are normally
- A. low in both the nephric filtrate and urine
 - B. high in both the nephric filtrate and urine
 - C. low in the nephric filtrate but high in urine
 - D. high in the nephric filtrate but only minimal in urine

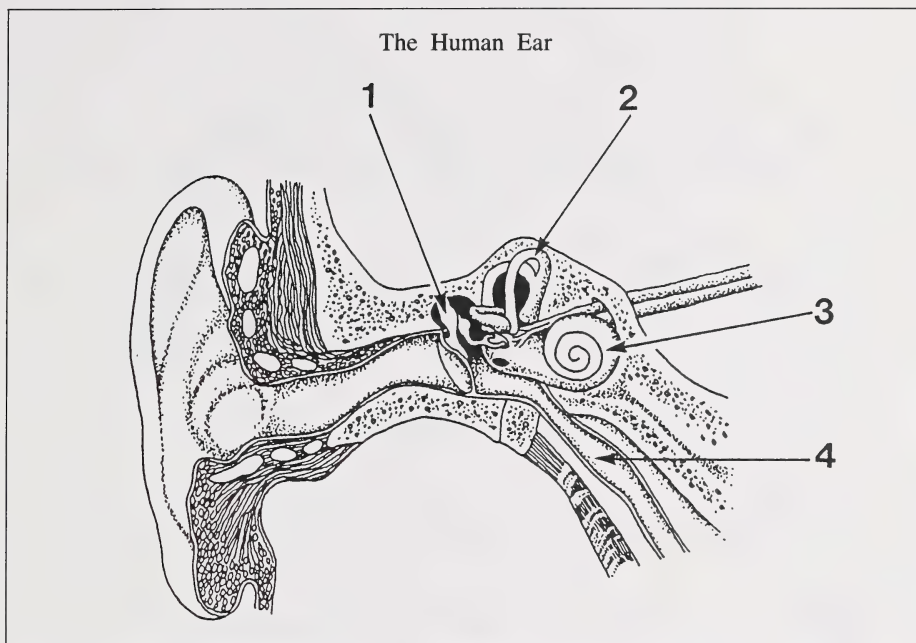
Use the following information to answer question 43.

An artificial kidney machine is used to treat people with kidney disease. The machine removes wastes from their blood.



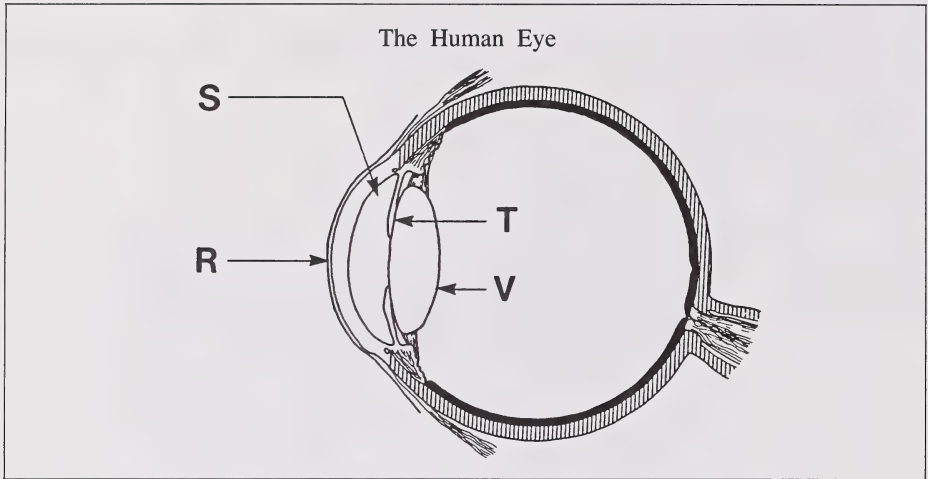
43. The urea in the patient's arterial blood enters the rinsing fluid by
- A. osmosis
 - B. diffusion
 - C. active transport
 - D. selective reabsorption
-
44. Insufficient amounts of TSH, which is secreted by the pituitary gland, will result in
- A. excessive growth
 - B. decreased metabolic rate
 - C. greater production of thyroxine
 - D. further inhibition of TSH secretion

Use the following diagram to answer questions 45 and 46.



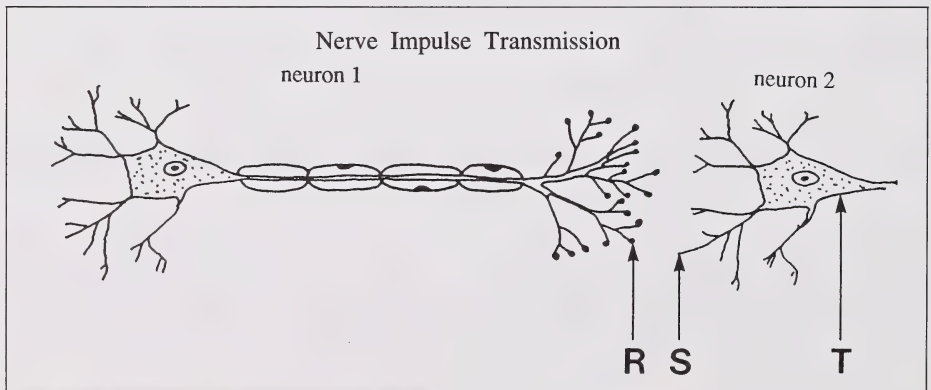
45. The structure that contains the organ of Corti is labelled
- A. 1
 - B. 2
 - C. 3
 - D. 4
46. As sound vibrations move through the outer ear into the inner ear, the sequence of media through which the vibrations pass is
- A. gas \rightarrow solid \rightarrow liquid
 - B. gas \rightarrow liquid \rightarrow solid
 - C. solid \rightarrow gas \rightarrow liquid
 - D. solid \rightarrow liquid \rightarrow solid
-
47. Transmission of a nerve impulse along a neuron depends on the ability of the stimulus to
- A. increase initially the permeability of the neuron to sodium ions
 - B. decrease initially the permeability of the neuron to sodium ions
 - C. increase initially the permeability of the neuron to potassium ions
 - D. decrease initially the permeability of the neuron to potassium ions

Use the following diagram to answer question 48.



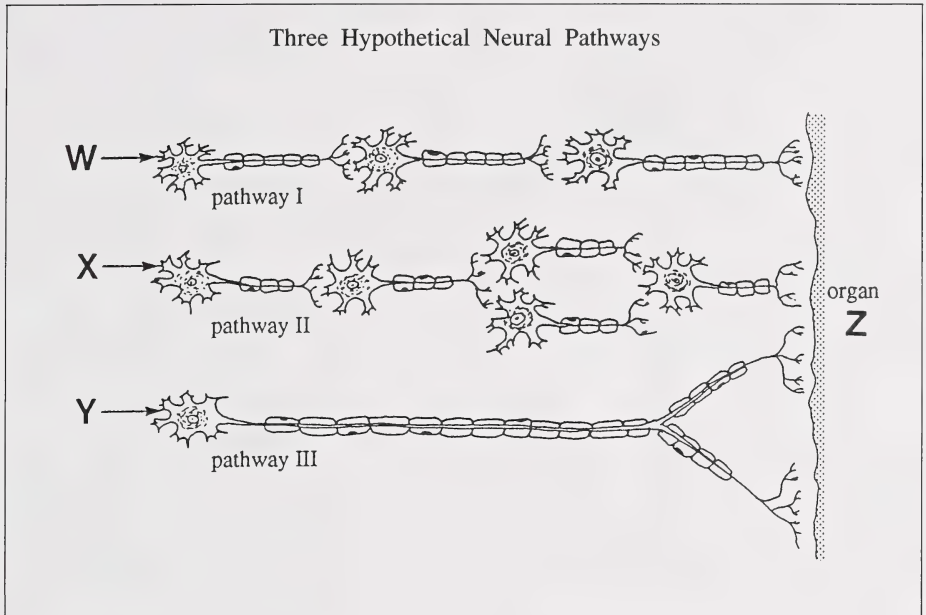
48. The structure that controls the amount of light entering the eye is labelled
- A. R
 - B. S
 - C. T
 - D. V
-

Use the following diagram to answer question 49.



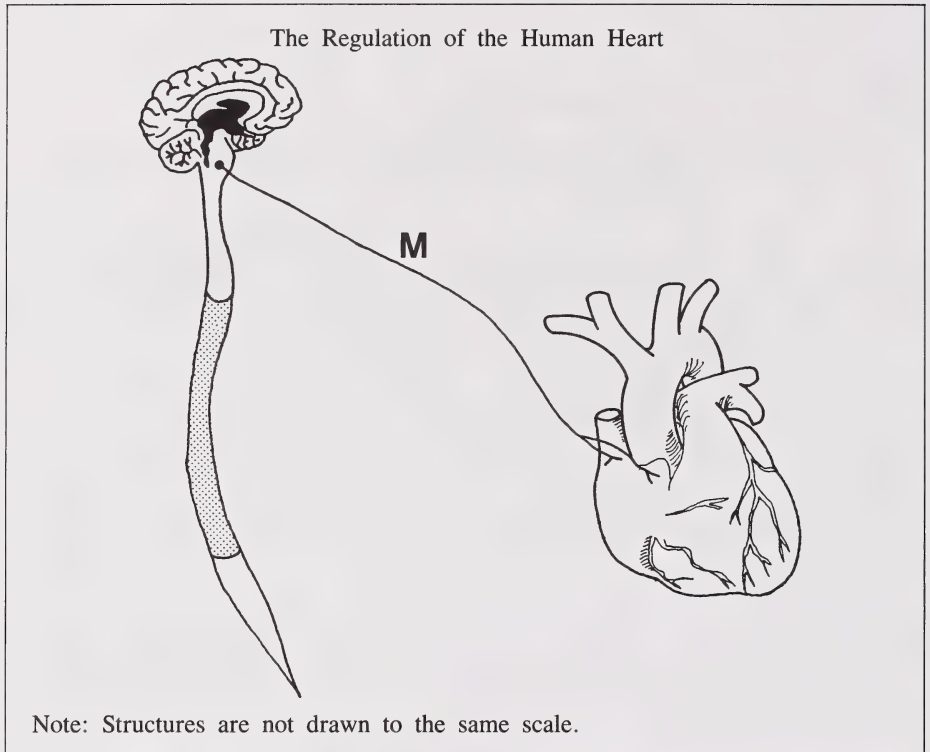
49. Transmission of a nerve impulse from neuron 1 to neuron 2 involves
- A. the release of cholinesterase from R
 - B. the transfer of acetylcholine from S to R
 - C. the diffusion of acetylcholine from R to S
 - D. a wave of depolarization passing from T to S
-

Use the following diagram to answer question 50.



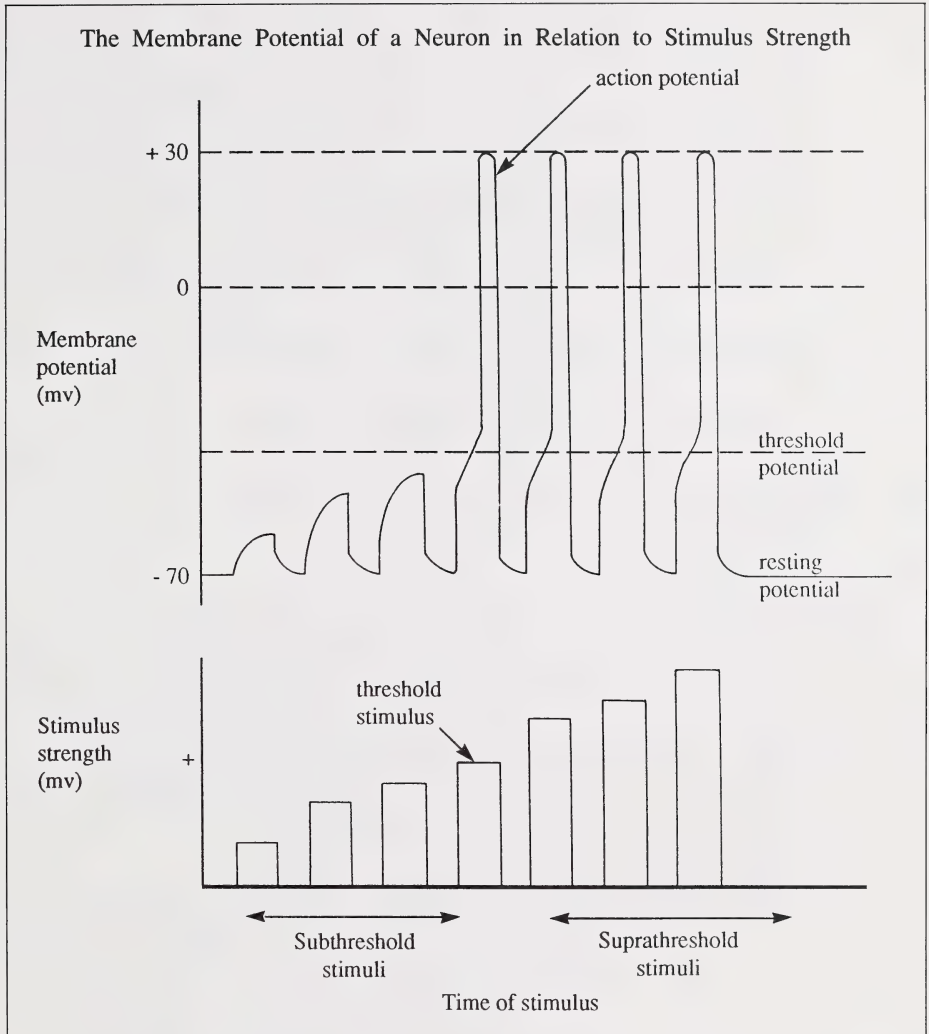
50. The neural pathways at locations W, X, and Y are simultaneously stimulated above their respective threshold levels. Organ Z will receive an impulse from
- A. pathway I first
 - B. pathway III first
 - C. pathways I, II, and III simultaneously
 - D. pathways I and III simultaneously and pathway II later
-
51. Synaptic transmission of a nerve impulse will continue unless
- A. adrenaline is secreted into the synapse
 - B. acetylcholine is removed from the synapse
 - C. cholinesterase is removed from the synapse
 - D. adenosine diphosphate is removed from the synapse
52. Most reflexes require the combined functioning of
- A. sensory nerves, the cerebrum, and motor nerves
 - B. association neurons, the cerebrum, and motor nerves
 - C. association neurons, the spinal cord, and motor nerves
 - D. sensory nerves, association neurons, and motor nerves

Use the following diagram to answer question 53.



53. If M represents a nerve that acts to slow the heartbeat, a nerve that would oppose that action is a
- A. sensory nerve
 - B. cranial nerve
 - C. sympathetic nerve
 - D. parasympathetic nerve
-
54. The autonomic nervous system
- A. operates through voluntary action
 - B. contains only the axons of sensory neurons
 - C. has glands and skeletal muscles as effectors
 - D. controls the internal environment of the body

Use the following graphs to answer question 55.



55. Which conclusion can be drawn from the graphs?

- A. A membrane must be depolarized to the threshold level in order to produce an action potential.
- B. If the stimulus strength exceeds the resting potential, an action potential will be produced.
- C. Accumulation of small subthreshold stimuli can cause an action potential.
- D. Increasing the stimulus strength increases the action potential.

Use the following information to answer question 56.

Many drugs influence autonomic nervous functions. The table describes the action of four drugs.

<u>Drug</u>	<u>Action</u>
Ephedrine	stimulates release of noradrenaline from sympathetic nerve endings
Reserpine	inhibits sympathetic activity by preventing the synthesis of noradrenaline
Neostigmine	blocks the action of cholinesterase at neuromuscular junctions
Pilocarpine	produces parasympathetic effects

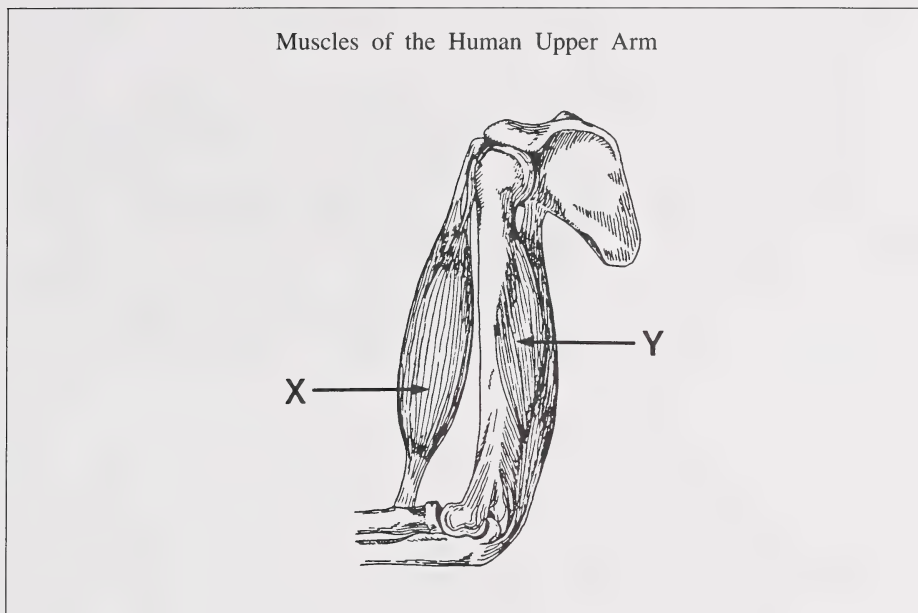
56. Which drug would cause an increase in blood pressure?

- A. Ephedrine
 - B. Reserpine
 - C. Neostigmine
 - D. Pilocarpine
-

57. When human muscle cells are deprived of oxygen, they produce

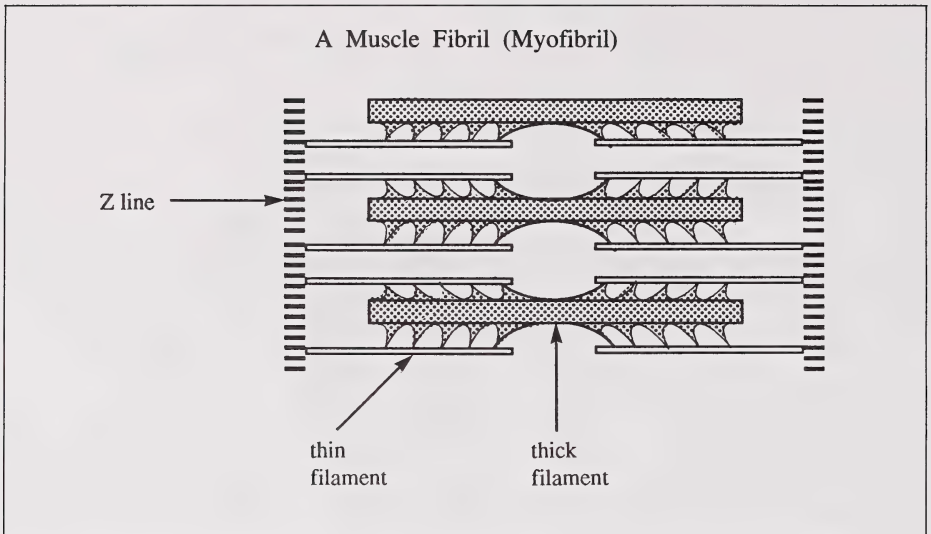
- A. more ATP
- B. lactic acid
- C. carbon dioxide
- D. carbonic acid and carbon monoxide

Use the following diagram to answer question 58.



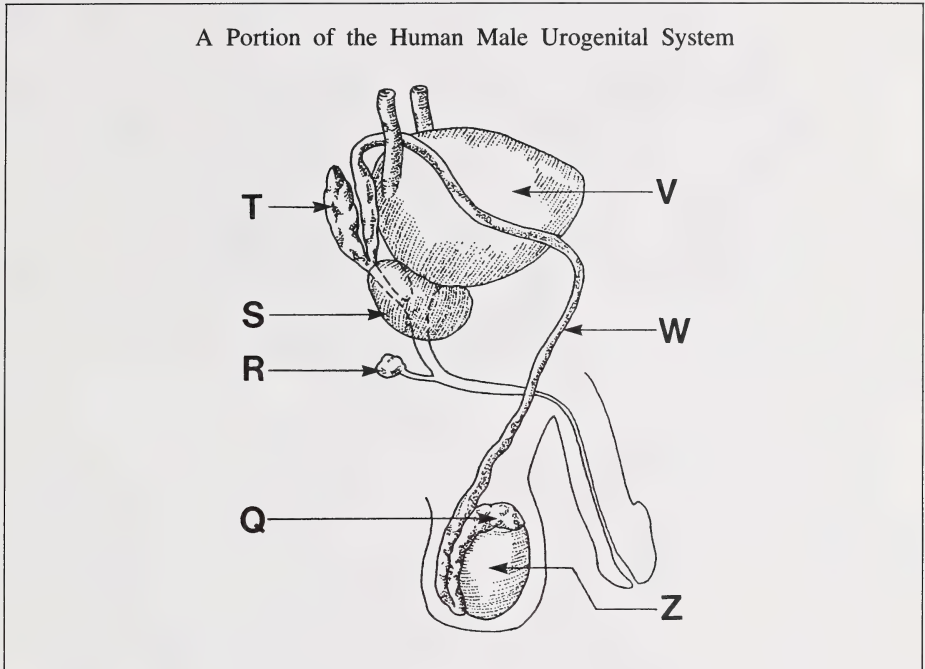
58. Muscles X and Y are examples of
- A. a smooth muscle pair
 - B. an extensor muscle pair
 - C. an involuntary muscle pair
 - D. an antagonistic muscle pair
-
59. In an experiment, a fibre within a muscle is electrically stimulated to twitch. Increasing the strength of the electrical stimulus would cause
- A. the number of muscle fibre twitches to increase
 - B. no change in the strength of contraction
 - C. the strength of contraction to increase
 - D. rapid fatigue of the muscle fibre

Use the following diagram to answer question 60.



60. Which statement about muscle contraction is true?
- A. The Z lines contract vertically to achieve muscle contraction.
 - B. As the muscle contracts, the thin filaments pull away from the Z lines.
 - C. The thin filaments are drawn over the surface of the thick filaments during muscle contraction.
 - D. As the muscle contracts, the Z line and the thin filaments on one side pull away from the Z line and the thin filaments on the other side.
-
61. Sperm are able to survive the acidic environment of the vagina because they are transported in a buffering fluid secreted by the
- A. prostate gland
 - B. epididymides (*pl.*)
 - C. lining of the urethra
 - D. gland cells of the testes

Use the following diagram to answer question 62.



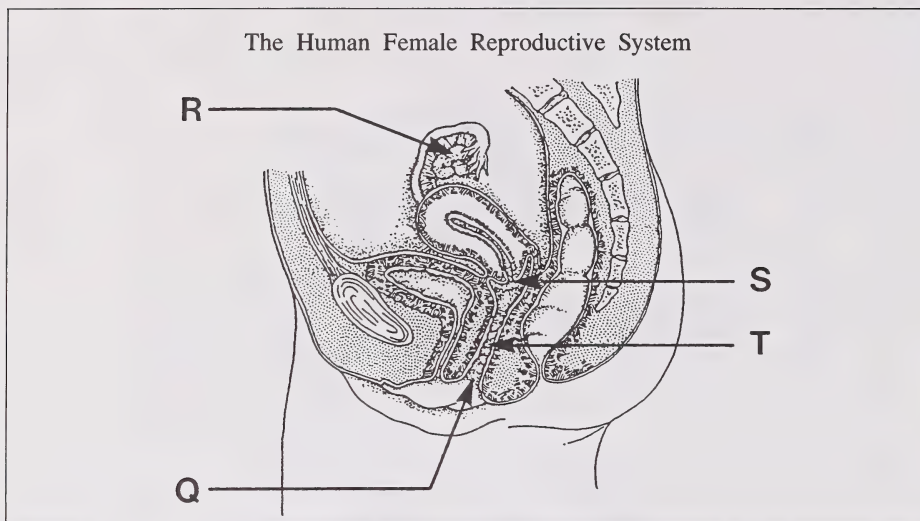
62. The metabolism of activated sperm is maintained by substances produced in **both**

- A. Q and W
- B. R and V
- C. S and T
- D. Z and S

63. At puberty, a human female's sexual organs begin to increase in size and fat storage increases in the thighs and buttocks. These changes occur because of the direct influence of

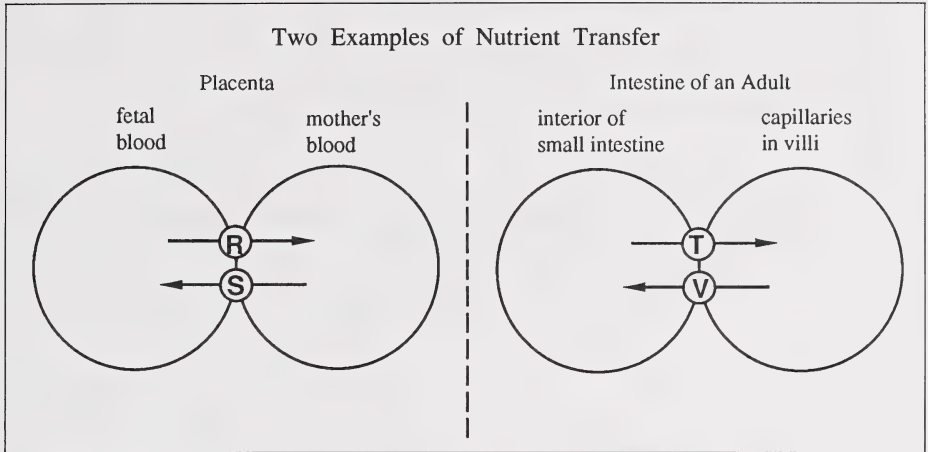
- A. progesterone
- B. estrogen
- C. FSH
- D. LH

Use the following diagram to answer question 64.



64. Cancer of the cervix develops in the region labelled
- A. Q
 - B. R
 - C. S
 - D. T
-
65. Occasionally, a developing embryo becomes implanted in tissues outside the uterus, such as those of a Fallopian tube, an ovary, the cervix, or another organ in the abdominal cavity. One reason such a pregnancy is unsuccessful is that
- A. adequate structures do not develop to transfer materials between the maternal and embryonic blood
 - B. the outer cells of the embryo attach to the endometrium to form the placenta, which degenerates
 - C. ovarian production of progesterone ceases and the placenta degenerates
 - D. FSH production ceases and the corpus luteum degenerates
66. Ingesting prescribed quantities of estrogen and progesterone during the first half of a menstrual cycle can prevent ovulation by
- A. inhibiting the secretion of FSH and LH by the pituitary
 - B. stimulating the secretion of FSH and LH by the pituitary
 - C. inhibiting the secretion of oxytocin and relaxin by the pituitary
 - D. stimulating the secretion of oxytocin and relaxin by the pituitary

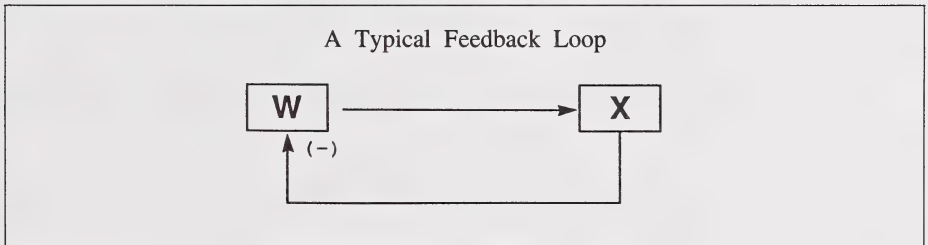
Use the following diagram to answer question 67.



67. The net transfer of nutrients is best represented by arrows

- A. R and T
- B. R and V
- C. S and T
- D. S and V

Use the following information to answer question 68.

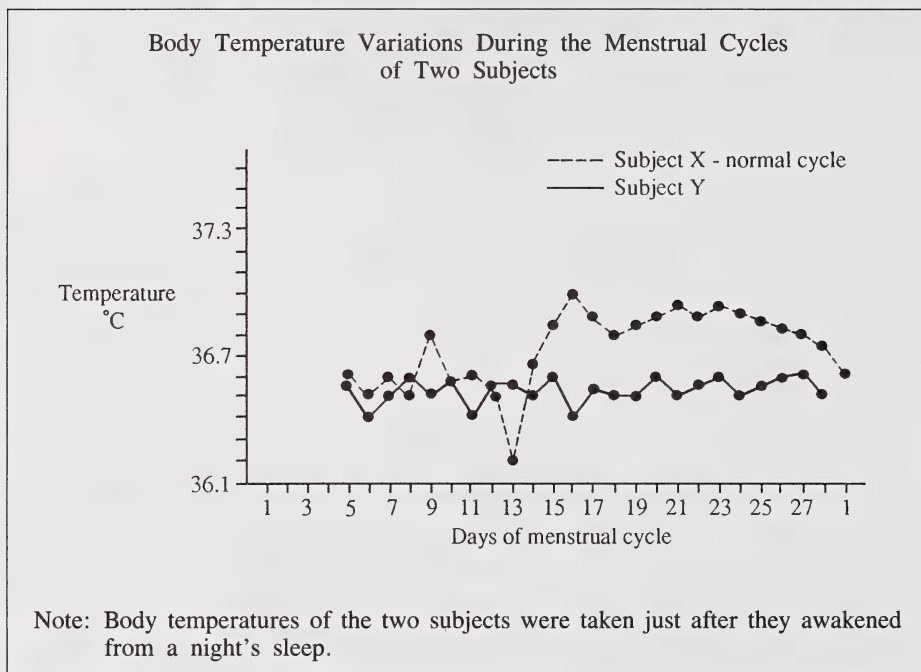


68. In the control of the reproductive system, the structures represented by the letters W and X respectively are the

- A. adrenals and the pituitary
- B. gonads (testes or ovaries) and the adrenals
- C. gonads (testes or ovaries) and the pituitary
- D. pituitary and the gonads (testes or ovaries)

69. During pregnancy, a drop in the level of progesterone
- A. stimulates ovulation
 - B. is followed by uterine contractions
 - C. causes a drop in the growth hormone levels
 - D. stimulates the ovaries to secrete progesterone

Use the following graph to answer question 70.



70. It can be inferred from the graph that, during this cycle, subject Y
- A. did not ovulate
 - B. became pregnant
 - C. did not menstruate
 - D. produced high levels of LH and progesterone

YOU HAVE NOW COMPLETED PART A. PROCEED DIRECTLY TO PART B.

PART B

INSTRUCTIONS

In this part of the examination, there are seven written-response questions for a total of 30 marks.

Read each question carefully. Write your answers in the examination booklet as neatly as possible.

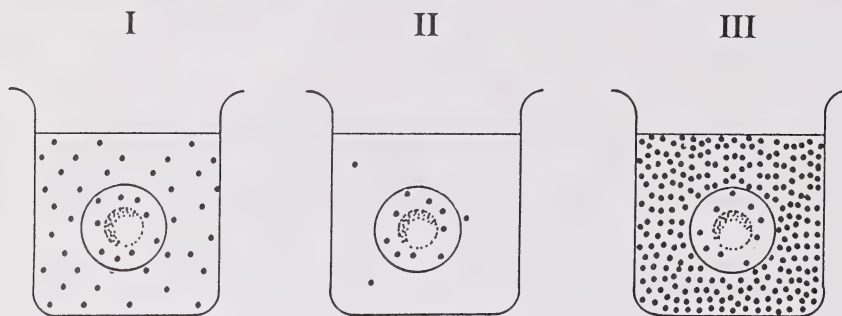
Communicate your answers in clear, complete sentences unless the response format dictates otherwise. Marks will be awarded for pertinent explanations and answers. Question 3 has two marks allotted for written communication skills.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

START PART B IMMEDIATELY.

Use the following information to answer question 1.

The diagrams show red blood cells that have been placed in solutions of varying salt concentrations. The dots represent particles of ionized salt.



Note: Cells and salt particles are magnified and are not drawn to scale.

(3 marks)

1. a. Identify which diagram best represents a red blood cell in distilled water. Explain your choice.

Diagram number _____

Explanation _____

- b. Identify which diagram best represents a red blood cell at the greatest risk of losing its water. Explain your choice.

Diagram number _____

Explanation _____

- c. Identify which diagram best represents a red blood cell in the plasma of a healthy person. Explain your choice.

Diagram number _____

Explanation _____

Use the following information to answer question 2.

A student wanted to investigate the effectiveness of enzymes in chemical digestion. To test tubes Q, R, and S, the student added the contents shown and then incubated the test tubes at 37°C for one hour. It was observed that little or no digestion took place in each test tube.

Q



pepsinogen
distilled H₂O
egg white

R



lipase
distilled H₂O
olive oil

S



amylase
distilled H₂O
sucrose

2. Explain why little or no chemical digestion occurred in each test tube. Then suggest **one** change to the contents of each test tube that would result in greater chemical digestion of the **food present** in the test tube.

(6 marks)

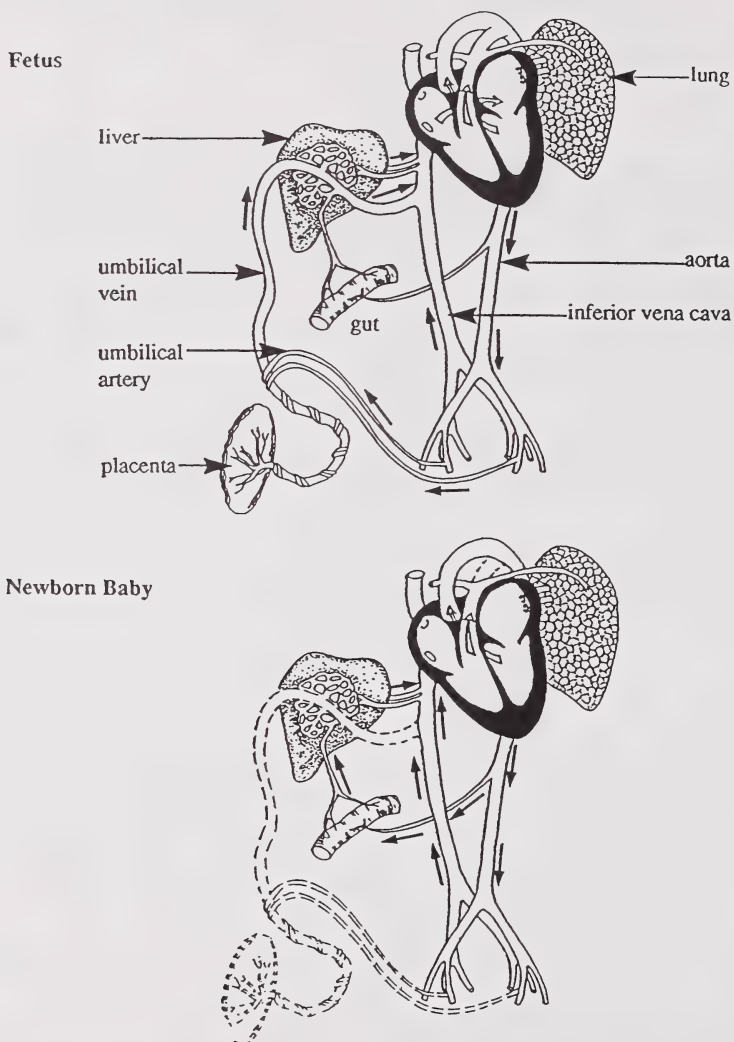
Test tube Q _____

Test tube R _____

Test tube S _____

Use the following information to answer question 3.

The Circulatory System in the Fetus and in the Newborn Baby



Note: The vessels represented by broken lines degenerate after birth.

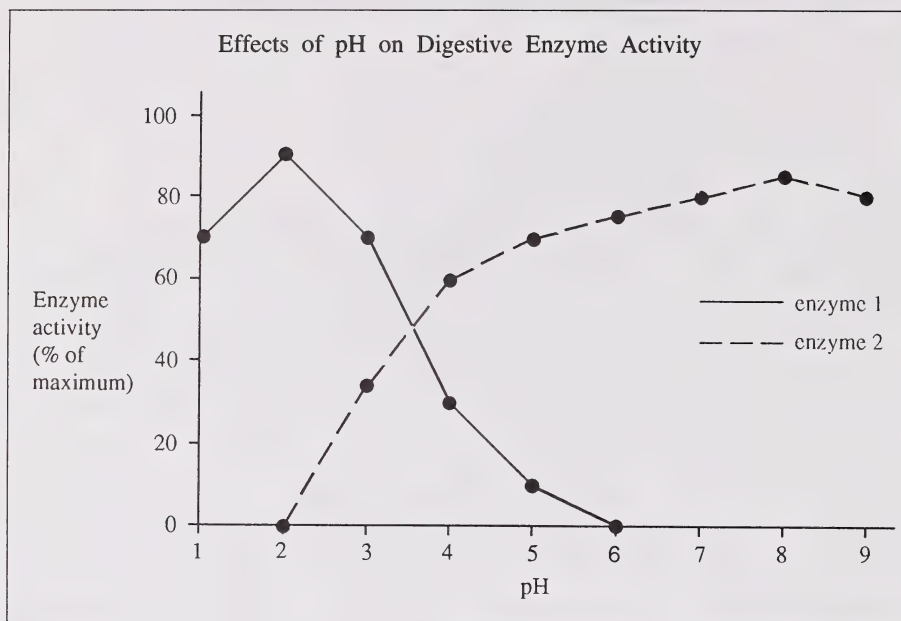
(6 marks)

3. Carefully study the diagrams of the heart and blood vessels. Describe **two** specific differences between blood circulation in the fetus and blood circulation in the newborn baby. For each difference identified, explain why the changes in the newborn are necessary in order for its circulation to become independent of the placental association with the mother.

Continued

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Use the following graph to answer question 4.



(3 marks)

4. Evaluate the accuracy of each statement by citing evidence from the graph.

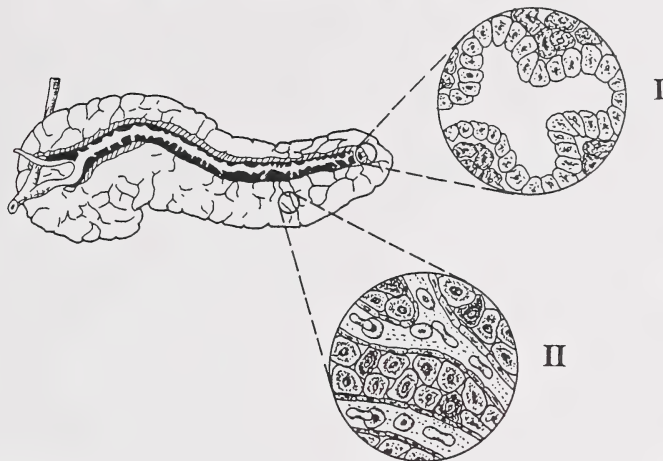
a. The activity of enzyme 2 is greatest in an alkaline solution.

b. Enzyme activity is affected by temperature.

c. Enzymes 1 and 2 would **not** be optimally active in the same part of the digestive tract.

Use the following diagram to answer question 5.

A Surface and an Internal View of the Human Pancreas

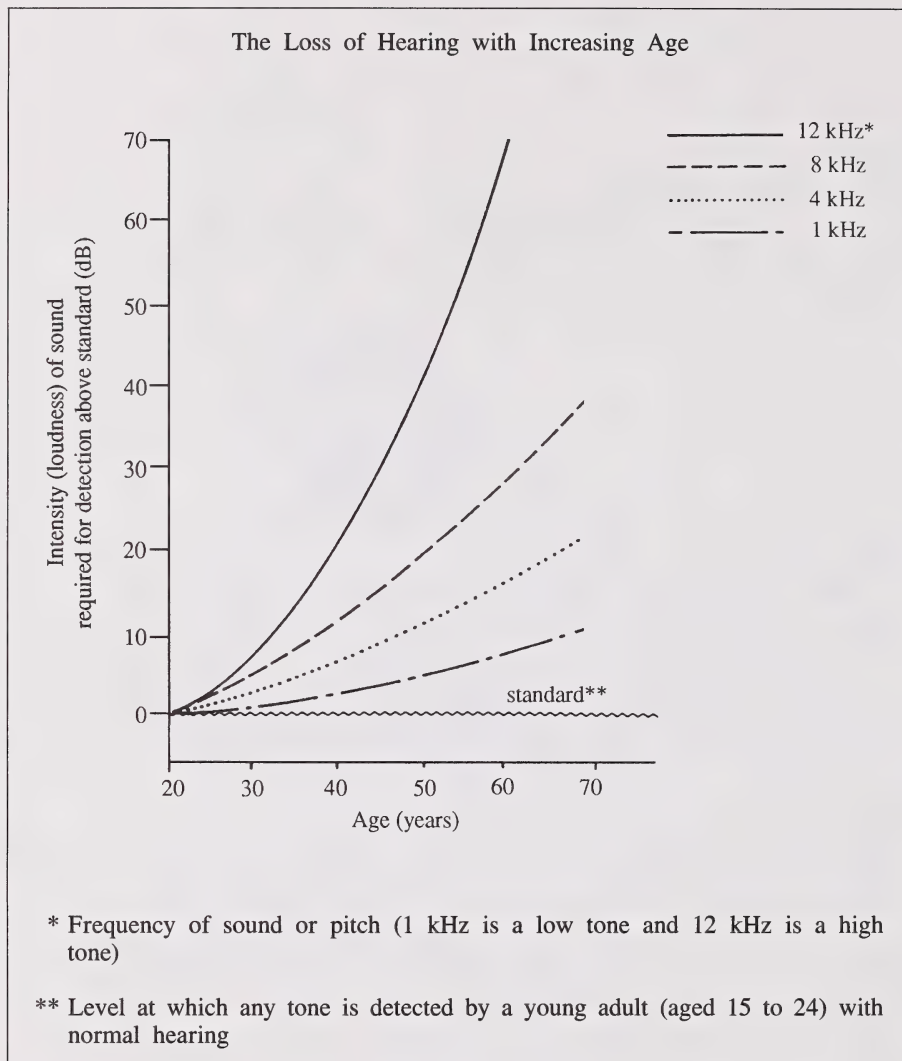


5. Complete the chart by writing the required information in boxes a to g.

(5 marks)

Structure	Type of Gland (½ mark)	Substance Secreted by Each Gland (½ mark each)	Function of Each Substance Secreted (1 mark each)
I	exocrine	lipase	e.
		b.	f.
II	a.	c.	g.
		d.	increases glucose levels in blood

Use the following information to answer question 6.



(4 marks)

6. a. How much louder than the standard must a sound be in order for a 50-year-old adult to hear a frequency of 8 kHz?

Continued

- b. As people age, what happens to their ability to hear low-frequency sounds compared with high-frequency sounds?

- c. Identify **one** manipulated (independent) variable and **one** responding (dependent) variable represented by the data.

(3 marks)

7. When a person drinks alcoholic beverages, the individual's volume of urine increases.

- a. How does alcohol affect the secretion of ADH?

- b. How does this effect on ADH secretion alter the function of nephric tubules in the kidneys?

- c. How does the concentration of urine change after a person drinks alcoholic beverages?

**YOU HAVE NOW COMPLETED THE EXAMINATION. IF YOU HAVE TIME,
YOU MAY WISH TO GO BACK AND CHECK YOUR ANSWERS.**

(NO MARKS WILL BE GIVEN FOR WORK DONE ON THIS PAGE)

FOLD AND TEAR ALONG PERFORATION

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FOLD AND TEAR ALONG PERFORATION

FOR DEPARTMENT USE ONLY

M1

M2

M3

M4

APPLY LABEL WITHOUT STUDENT'S NAME

BIOLOGY 30

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(FIRST NAME)

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M

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SEX:

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(Village/Town/City)

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SCHOOL:

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